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ABSTRACT

The goal of this lesson plan is for second-grade students to understand the steps in how food is made and delivered to the grocery store. Students create a play where each person plays a part in the production and distribution of food. The lesson suggests that the class perform the play on parents' night. It provides five activities for students to complete. Each activity helps students learn about making orange juice and shipping it to the public. Activities in the lesson plan are: (1) "Geography of Oranges"; (2) "Juicing an Orange"; (3) "Orange Juice Factory"; (4) "Orange Juice Taste Test"; (5) "Transporting the Orange Juice"; and (6) "The Play." The lesson plan lists resources needed by the students; discusses the process; provides learning advice; explains evaluation criteria; offers a conclusion; and presents extension activities. The teacher notes section provides grade level/unit and lesson purpose; history/social science and language arts standards; suggests length of lesson; lists teacher materials needed; discusses interdisciplinary connections (language arts, science, mathematics, and performing arts); and adaptations for special needs students. Contains a glossary. (BT)

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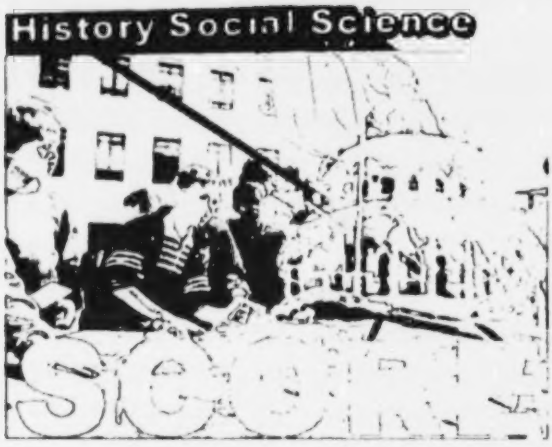

Schools of California Online Resources for Education (SCORE): Connecting California's Classrooms to the World

Orange Juice – From the Tree to the Glass!

Second Grade Activity by Linda M. Ricchiuti

SO 034 260

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Orange Juice - From the Tree to the Glass!

Grade Two - People Who Make a Difference: People Who Supply Our Needs

Have you ever wondered where all of your groceries come from? Are the items in the grocery store created right in the store itself? The answer is no, actually each item goes through a very long and complex process before it gets to the shelf at the market!

It takes many people to bring you each item you find in the grocery store. Many of the items in the grocery store travel miles across the country by trucks, trains, and boats before they arrive in the market.

The Task

In order to understand all of the important steps in how food is made and delivered to the grocery store, you and your classmates will create a play where each person will play an important part of the production and distribution process. Your class will perform this play on parents night so that you can help teach your parents all of the important steps and decisions that must be made before food gets to the grocery store.

Before your class creates the play, you must complete five activities. Each activity will help you learn more about making orange juice and shipping it to the public.

To begin looking at how food is made and delivered to the grocery store, let's take a look at something you might buy in the grocery store. How about orange juice? Where did the orange juice sitting in your refrigerator come from?

In this activity, you will discover where orange juice comes from and how it is made available to millions of people everyday. The process to make orange juice is long and more involved than you might imagine!

Resources

Before beginning you will need to gather the following materials:

- paper and pencil
- a dictionary
- ENCARTA World Atlas (if you have this on CD ROM)
- a World map
- a map of the United States
- an orange

The Process

Before we begin to understand how orange juice is made, first we must understand the words used to describe the process. Keep a sheet of paper and a pencil next to the computer as you work to write down the definitions of any blue words that appear. Click on each blue word to learn the meaning of the word. For example, to learn the meaning of the word production, you may click on the word because it appears in blue. The definition of the world will appear. Carefully write down the definition of each of the blue words.

Before orange juice can be made, we must first grow the orange. Where do you think oranges grow? Many oranges grow in Southern California, in places like, Riverside, and the City of Orange (I wonder how that city got its name!) Some oranges grow in other places in the United States like Florida. Oranges are also grown as far off as Morocco in Africa.

Go to Activity 1

Learning Advice

As you are working through this unit, it is very important to stay organized! Keep the following items next to the computer as you work:

- Pencil
- Paper or, better yet, a notebook so all of your papers and maps will stay together
- Kee your maps next to the computer so you can look at them and write on them

Evaluation

You will be evaluated based on your performance in the following areas:

- How well you answered the questions in Activity 1
- How accurately and neatly you drew your world map
- How well you answered the questions in Activity 2
- How well you answered the questions in Activity 3
- How well you filled in your orange juice taste test chart and answered the questions in Activity 4
- How accurately and neatly you drew your transportation map in Activity 5
- How well you explained how the crop loss effected each character in the play in Activity 6

Reflection

Think about other things that you use every day. How are they produced? How do they get to the store? How about the production of tennis shoes, shoelaces, or bubble gum?

How might your parents car be produced and distributed? How would people be impacted if the automobile factory workers went on strike?

Conclusion

Next time you go to any store, look around at all of the things that you might buy. Think about how many people it takes to grow, or produce the products that you use everyday. When we have heavy rain or frost think about how it might impact the food you eat and the products you buy, and especially all of the people who supply our needs.

Extension activities:

1.
2. Visit the grocery store and see where the orange juice you buy comes from.
3. Visit an orange grove to see the picking process.
4. Make some delicious fresh squeezed orange juice in your classroom.
5. Use this Internet site to get wonderful recipes to make many things using oranges.
6. Discover the nutritional content of oranges by clicking on this Internet site

Teacher notes

Grade Level/Unit:
Grade Two: People Who Make a Difference
People Who Supply Our Needs

Purpose of Lesson:
This activity is designed to help second grade students understand the interrelationship and develop an appreciation for all of the many people who work hard to produce and distribute many items students may use on a daily basis.

H/SS Standards, Grades 1 and 2: Students understand basic economic concepts. They understand the role of buyers (consumers) and sellers (producers) of goods and services; describe the specialized work that people do to manufacture, transport, and market goods and services; and describe the economic networks used in daily life (e.g., transportation [network]).

History-Social Science Grade 1: Students compare and contrast the absolute and relative locations of people, places, and environments and describe the physical and human characteristics of places. They use maps and globes to locate [orange juice producing areas of the world], construct a simple map, using cardinal direction and map symbols, describe how location weather, and physical changes affect the way people live; and **explain how the place...is connected with the wider world through transportation...networks.**

Language Arts Standards Grades 1 and 2: Reading Comprehension: Students read and understand grade-level-appropriate material...including... responding to essential questions, making predictions, and comparing information from several sources; restate facts and details in text to clarify and organize ideas; recognize cause and effect relationships in text.

Writing Strategies: Students write clear and coherent sentences and paragraphs that develop a central idea. They group together related ideas, and maintain a consistent focus; select a focus when writing and use descriptive words; create readable documents with legible handwriting. They write brief narratives based on their experience that move through a logical sequence of events.

Listening and Speaking Strategies: They speak in a manner that guides and informs the listener's understanding of key ideas, using appropriate phrasing, pitch, and modulation. They present a story that moves through a logical sequence of events and describes story elements (e.g., characters, plot, setting).

Length of Lesson:
This activity is highly adaptable in length because it is broken down into various steps that may or may not all be used. This activity may three to four hours or up to two to three weeks.

Teacher Materials:
Students will use a variety materials and resources including:

- Internet Access
- paper and pencil
- dictionary
- ENCARTA World Atlas on CD - ROM (if available) or a text version of a good atlas
- a World map
- a map of the United States
- an orange

Interdisciplinary Connections:
English/Language Arts: Sentences describing taste test
Science: Scientific Method in the orange juice taste test
Mathematics: Percentage chart for the frost damage of oranges
Performing Arts: Production of a play

Adaptations to Special Needs:
This lesson is designed with several "Activities," many of which do not need to be followed exactly as they are written. To adapt this lesson to a variety of student levels, the teacher can use one or more of the following suggestions:

- Slow the lesson pace down or speed the lesson pace up
- Eliminate "Activities" of the lesson to fit the needs of the students
- Take a specific "Activity" and expand it to fit the needs of the students

Background Information and Additional Teacher Resources:
Refer to the Extension Activities section of the student activity for further resources.

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Activity 1 - The Geography of Oranges

Let's look at three different maps and answer the following questions:

For a world map go to: http://www.excite.com/travel/regions/

To view Africa go to http://www.excite.com/travel/regions/africa/

To view a map of Morocco go to:
http://www.lib.utexas.edu/Libs/PCL/Map_collection/africa/Morocco.GIF

To view an orange harvest in Morocco go to:
http://geogweb.berkeley.edu/GeoImages/Miller/orange.html

- What type of climate do all of these places appear to have in common?
- Where are each of these places geographically located? Are they in mountain, desert, wetland, tropical, or forest regions?
- Why do you think they are all located near water?
- How does climate effect what farmers can grow?
- What can nature do that would damage orange crops?
- What type of location and weather do you think is ideal for growing oranges?
- Using your World map:
    - Outline Africa.
    - Shade in Morocco.
    - Draw a star where Merekesch would appear.
    - Draw a dotted line ----- from Morocco to Florida using the most direct route.
    - Using the scale on the map, approximately how many miles would it be to travel from Morocco to Florida?

Activity 2 - Juicing an Orange

Now that you understand where oranges grow, how do you think they become juice?

Let's look at an orange. We know that oranges grow from orange trees, but did you ever wonder how that orange becomes juice? Look at a real orange and see if you can make juice from it.

Think about what steps you would take to turn it into juice.

- Would you smash it?
- What would you do with the peel, pulp and seeds from the orange?
- Once you removed the peel, pulp and seeds, would you throw them away?
- Could you recycle the peel, pulp and seeds?
- What could the peel, pulp and seeds be used for?
- How many oranges do you think it takes to make a glass of orange juice?
- How do you think orange juice is made for millions of people everyday?
- In order to keep the orange juice fresh, it must be kept cold. How do you think people in the past, before refrigerators were invented, kept orange juice cold?

Activity 3 - The Orange Juice Factory

After experimenting with an orange, let's take a tour at http://members.aol.com/citrusweb/oj_story.html **showing how orange juice is made in Florida.**

After taking your tour, write one or two sentences to answer the following questions.

1. **What does a "trunk shaker" do?**
2. **How do the oranges get from the field to the factory?**
3. **How are the oranges cleaned?**
4. **How are oranges checked for quality?**
5. **What would happen if the oranges were not checked for quality and some bad oranges made it through to become bad juice?**
   - **What might happen to the consumer?**
   - **What might happen to the store waiting to stock the orange juice?**
   - **What might happen to the entire orange juice industry?**
   - **How might the orange juice industry fix the problem of bad fruit getting into the juice?**
6. **After the oranges are checked, what turns the oranges into juice?**
7. **How are the pulp and seed removed from the juice?**
8. **What is done with the pulp and seed after they are removed from the juice?**
9. **What is the difference between fresh squeezed orange juice and concentrate?**
10. **Why is water removed from the juice?**
11. **After water is removed from the juice, where is the juice stored?**
12. **Once the juice has been processed, what must happen before it is sent to the market?**
13. **Describe the different types of containers that you have seen that hold orange juice. What are they made of?**

Activity 4 - Orange Juice Taste Test

Let's try a class taste test! Your teacher will secretly put fresh squeezed orange juice in one glass, and juice made from concentrate in another. See if you and your classmates can tell the difference.

Before you begin the taste test, make a list of all of the senses that you are going to use to tell the difference between the two types of orange juices.

Make a chart like this one:

Write a sentence describing each of the following senses when you tasted Orange Juice #1: What did you...

See	
Smell	
Taste	
Feel	

Write a sentence describing each of the following senses when you tasted Orange Juice #2: What did you...

See	
Smell	
Taste	
Feel	

1. Write two sentences describing the differences between the two orange juices.
2. Which of the two orange juices did you choose? Explain why you choose it.

Activity 5 - Transporting the Orange Juice

After the orange juice has been bottled, somehow the bottles or cartons need to get from the processing plant in Florida to the store where they will be sold in Wisconsin. Using a map of the United States, draw the best route from Florida to Wisconsin. Remember that the juice must stay fresh and cold through the entire trip. Think about the following questions as you plan your route:

1. What type of transportation are you going to use to transport the orange juice? You could use either a truck, a train, or a boat, but be sure to explain your choice of transportation. Using a plane would be very, very expensive so that is not an option.
2. How are you going to make sure the orange juice stays fresh during transportation?
3. What time of year would be best for transporting the juice? Why is that important?
4. What type of land will you be traveling through and why is that important?

Activity 6 - The Play

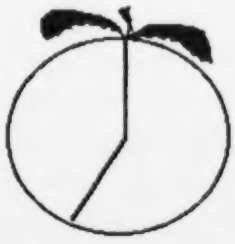
Now that you understand all of the important aspects in making orange juice, it is time to put it all together in a play!

Here is the scenario or plot of the play:

Scenario:

It is prime orange growing season in Florida. All of a sudden, a huge storm blows in and the temperatures drop from warm 85 degrees to below freezing temperatures of 28 degrees. All orange growers know that frost will kill many of their oranges. The farmers are lighting their smudge pots in the field that act as portable heaters to try to warm up the crops. Look at this Internet site to see what a smudge pot looks like. http://geogweb.berkeley.edu/GeoImages/BainCalif/cal400/smupots.jpg

All of the orange growers are frantically trying to save their orange crops. Out in the fields, the growers are losing a large portion of their crops. By the time the storm leaves, the orange growers have lost 60 percent of their crops.



According to this chart, the majority of the crops were damaged by frost. Draw your own chart, and color in the side that shows 60% crop loss. See if you can make your chart look like an orange!

This terrible loss has impacted many more people than just the orange growers. The loss of crops has impacted the growers, the field workers, the processing plant workers, the transportation employees, the grocery store owners, and the consumers.

Before beginning the play, write a sentence or two explaining how the crop loss impacts each of the following people:

- Mr. Gonzalez is the owner of an orange grove where he grows tons of oranges each year.
- Sally and Tom are workers who pick the oranges and run the large equipment that is needed to harvest the oranges.
- Mr. Tomara is in charge of the cleaning process of the oranges.
- Several workers check each orange by hand for quality as the oranges pass by on a conveyor belt.
- Bob and Kim are in charge of making sure all of the pulp and seeds are removed and recycled
- Tai and Gina oversee the bottling process.
- Karl is in charge of the trucking transportation company and he has several drivers that work for him.
- Mr. Rivera owns a grocery store who purchases oranges and orange juice from Mr. Gonzales.
- Mrs. Danvers is a woman who shops at Mr. Rivera's store and purchases orange juice each week.

Now, with your teacher's help, you will choose one of the characters from the list above and act out how the frost has impacted your character.

Orange Juice Glossary

production - the making of something

climate - weather of a certain place

geographically - physical features of a certain place

mountain - having mostly mountains and rocky cliffs

desert - dry place usually with very little rainfall

wetland - area with a lot of ground water like swamps or marshes

tropical - very hot and wet area

forest regions - areas with a lot of trees

crops - food that is grown and picked in fields (like corn, pumpkins, or wheat)

pulp - soft, moist, sticky part of a fruit

quality - how good or bad something is

consumer - person who buys the product

industry - large group of companies that create a product to sell

concentrate - a pure form of something without anything added to it

route - a road or course for traveling

transportation - means of moving something from one place to another

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